



A systematic review of the effectiveness of art therapy delivered in school-based settings to children aged 5-12 years

Journal:	<i>International Journal of Art Therapy: Inscape</i>
Manuscript ID	RART-2019-0022.R2
Manuscript Type:	Research Paper
Keywords:	systematic review, art therapy, primary schools, children, 5-12 years' old

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**A systematic review of the effectiveness of art therapy delivered in
school-based settings to children aged 5-12 years**

(word count: 4913)

ABSTRACT

This paper aims to identify and synthesise the types of school-based art therapy interventions, and appraise the effectiveness for children aged 5-12. The searches included ten major electronic databases, grey literature, and contact with experts in the field. Six completed and two on-going studies were identified. Art therapy was delivered to children with asthma, behavioural disorders, oppositional defiant disorders, separation anxiety disorders, learning disorders, and disruptive behaviours. All interventions were delivered over 7-25 sessions, and lasted 40'-60' per session. The sample sizes ranged between 20-109 participants, providing this systematic review with data from 247 participants. The findings suggested that art therapy is effective in improving children's quality of life; anxiety; self-concept; problem-solving skills, attitudes towards school; emotional and behavioural difficulties. The follow-up findings were also promising; though confirmatory evidence is needed. The risk of bias in most studies was high or unclear, highlighting the importance of following standardised reporting guidelines. Future research needs to focus on the identification of primary outcomes and measures that are tailored to art therapy interventions, and explore the (cost-) effectiveness of shorter versus longer durations of treatment.

Plain language summary

Art therapy is widely used in schools to alleviate and prevent children’s emotional difficulties. In contrast to talking therapies, art therapy aims to facilitate personal change and growth through the use of visual arts media, such as, drawing, painting, sculpture, clay, or digital art media.

This systematic review aims to summarise the results from school-based art therapy studies, and to appraise the effectiveness for children aged 5-12. Ten major electronic databases were systematically searched. Art therapy–specific journals and books were hand-searched, and contact was made with experts in the field.

From the 10911 retrieved results, 623 results were duplicates and 9181 were excluded following title screening. Following abstract screening, 41 papers appeared to be relevant and the full text was requested. Six completed and two on-going studies met the inclusion criteria and were included in this review. Art therapy was delivered to children with asthma, behavioural disorders, oppositional defiant disorders, separation anxiety disorders, learning disorders, and disruptive behaviours. The sessions were delivered over 7-25 weeks, and lasted 40’-60’ per session. The number of children in individual studies ranged between 20-109 participants, providing this systematic review with data from 247 participants in total.

The results suggested that art therapy is effective in improving children’s quality of life; anxiety; self-concept; problem-solving skills, attitudes towards school; emotional and behavioural difficulties. The follow-up findings were also promising; though further research is needed to increase confidence. Most studies appeared to have questionable methodological quality. Therefore, the use of reporting guidelines is important to allow for a better understanding of the results. Future research is needed to identify common primary outcomes, and investigate the effectiveness and cost-effectiveness of shorter versus longer durations of treatment.

Highlights:

- There is evidence regarding school based art therapy effectiveness in a variety of outcomes, however, it is largely focused on studies with high and unclear risk of bias
- The role of the frequency, length, and intensity of art therapy sessions on its effectiveness is still questionable
- Most outcomes are assessed by adults; children's voices remain insufficiently attended to
- Future research would benefit from adherence to standardised reporting guidelines which would in turn allow for transparency and better understanding of variations in the findings
- Incorporating qualitative methods into experimental designs may revitalise the interest in art therapy research and contribute significantly to the development of the field

Key words: systematic review, art therapy, primary schools, children, 5-12 years' old

INTRODUCTION

One of the major challenges in maintaining and reinforcing one’s state of well-being is people’s limited capacity to understand, accept, and safely express feelings and thoughts (House & Loewenthal, 2009). Children may struggle even more because of their limited vocabulary, skills and knowledge (Hughes, 2010). Particularly under stressful and painful circumstances, such as bereavement, abuse, or poverty, the need to express the underlying emotions becomes fundamental for a child’s health and happiness (Pellegrini, 2011). When children fail to express their feelings, needs, or desires, a number of emotional and behavioural difficulties arise (Essex et al., 1996). Anxieties and depression are the two most common mental health difficulties among children (DiTomasso & Gosch, 2006; McDowell, 2006). These are often overlooked by adults (parents, teachers, or gatekeepers), potentially through paying less attention to listening and observing what children non-verbally try to ‘say’ (Kutscher, Attwood, & Wolff, 2014). One approach that has been developed and used to facilitate non-verbal, emotional relief is art therapy.

Art therapy is a form of psychotherapy that uses art medium as the primary mode of communication. The main aim of art therapy is to enable psychological change and personal growth within a psychotherapeutic relationship, in a safe and facilitating environment (British Association of Art Therapy, 2014). Art therapy has been used to help children with physical, behavioural and/or emotional difficulties in a variety of settings, such as hospitals and clinics, outpatient treatment facilities and shelters (Karkou, 2010). More recently, art therapy has been used to support children with no ‘obvious’ difficulties, in a myriad of educational settings; for example, in order to help children prepare for: hospitalisation, school transition from primary to secondary schools; from special schools back to mainstream education, or while experiencing transition as a result of a change in their family circumstances (e.g death of a parent, parents separating or divorcing) (Pelligrini, 2011). According to the World Health Organization (WHO, 2014), giving children the opportunity to participate in the arts is closely linked to quality of life improvements and the development of skills and strategies transferrable to other areas of their life.

Through drawings, paintings, clay and creative visual or digital art media, children are being supported in ways that have the potential to reduce their anxiety and relieve stress and

fears. Rubin (2010) argues that this allows children to redirect the energy that was previously focused on supporting negative behaviours, or turned inwards. Art therapists use the artistic process to encourage children to discuss any personal difficulties that might interfere with their learning, performance, and general day-to-day functioning. In addition, when children talk while drawing, they often reveal significantly more information than in solely talking therapies. This is thought to be due in part because the process of art therapy has the potential to increase memory retrieval (Pellegrini, 2011).

In the UK, almost two-thirds of registered art therapists work with children in schools (Karkou, 2010), however, we have little insight into the effectiveness of art therapy delivered in these settings. The most current systematic review (Cohen-Yatziv & Regev, 2019) included twelve studies, yet not all of them were experimental, addressed effectiveness, or were delivered in primary school children – which were the inclusion criteria for the current systematic review. The authors concluded that art therapy has the potential to alleviate post-traumatic symptoms, and positive effects on children's special educational needs or other challenges in life. McDonald and Drey (2017) also found positive effects in various outcomes and no negative effects; though the potential for harm was not reported in any study. The inclusion criteria of this systematic review are similar to those of McDonald and Drey (2017), but one more study is included as well as two ongoing clinical trials. Furthermore, in this paper emphasis is given in the methodological quality of the included studies, allowing readers to understand the main risks of bias; this in turn could improve the development of rigorous research in the future. A description of the art therapy sessions is also provided, which would enable replication in future research and practice.

The aim of this paper was to systematically identify, appraise and synthesise the available evidence relating to the effectiveness of art therapy delivered to children aged 5-12 years in primary school settings. Therefore, this review sought to address two aims:

1. To identify and describe the type of art therapy interventions that are currently delivered in a school-based setting to children aged 5-12 years;
2. To determine what evidence there is for the effectiveness of art therapy in school based settings.

METHODS

A systematic review was conducted in accordance with the Cochrane Handbook for Systematic Reviews (Higgins & Green, 2011) and the PRISMA statement (Liberati et al., 2009) for reporting on systematic reviews. Methods were pre-specified and documented in advance in a PROSPERO protocol (Moula, Campbell, & Hibberd, 2017).

Eleven electronic databases were systematically searched: PsycINFO; CINAHL; ERIC; MEDLINE; Campbell Collaboration Library; Education Abstracts Wilson; Education Research Complete; Cochrane library databases, including CDSR, CENTRAL and HTA. The searches included art therapy-specific journals, books, theses, the reference lists of included studies, contact with expert in the field, as well as clinical trial registries to identify any on-going trials (e.g. WHO ICTRP). The studies were restricted to those published in English between 1st January 1980 and 1st December 2018 as art therapies were first introduced into school settings in the early 1980s (Karkou, 2010).

The searches included relevant keywords, search terms, acronyms, synonyms, abbreviations, older terms or terms that might be used in different countries. The search strategy was built around identifying key terms for: art therapy, school settings and children. Truncation, wildcards and the Boolean operators were used to ‘balance’ between sensitivity and specificity. Free text terms were combined with thesaurus terms and keywords were searched in the full paper to avoid exclusions of potentially relevant studies. An example search string is shown in Table 1.

The eligibility criteria were based on the PICOS framework (Bowling & Ebrahim, 2005) (Table 2). Two reviewers independently assessed the retrieved studies by checking the title and abstract. When the abstract was unclear, the full article was requested.

The methodological quality was assessed by two reviewers using the Cochrane Collaboration's recommended tool for assessing risk of bias (Higgins & Green, 2011). The data were extracted by one reviewer and cross-checked by a second reviewer. In cases of missing data, the authors were contacted individually when contact details were available. Discrepancies and disagreements were resolved through discussion and involving a third reviewer.

RESULTS

Study selection

The systematic searches identified 10911 potential results, of which 623 were duplicates and 9181 were excluded following title screening. Following abstract screening, 41 papers appeared to be relevant and the full text was retrieved. Following full-text screening, 35 of these studies were excluded. The reasons for exclusion included irrelevant study design (i.e. case studies or qualitative studies) (n=21), not a relevant population (i.e. hospital-based or clinical-based populations outwith school setting or age group outwith the selection criteria) (n=9) or the intervention was not judged to be art therapy (i.e. combination interventions in which art therapy was adjunct) (n=5). The results of the PRISMA flow diagram (Liberati et al., 2009) are shown in Figure 1.

Six studies were eligible for inclusion (Beebe, Gelfand, & Bender, 2010; Khadar, Babapour, & Sabourimoghaddam, 2013a, 2013b; Regev & Guttman, 2005; Rosal, 1993; Zaheri, Nasab, & Mohammadi, 2013). The study characteristics are summarised in Table 3. Two studies were identified as on-going and details are shown in Table 4 (Edbrooke-Childs, 2016; Kharazmi, 2016). It was impossible to obtain the full text of eleven studies which are still awaiting assessment (Table 5).

Description of included studies

Two randomised controlled trials (Beebe et al., 2010; Regev & Guttman, 2005), and four controlled before-and-after studies (Rosal, 1993; Zaheri et al., 2013; Khadar et al., 2013a, 2013b) were identified, as presented in Table 3.

One study took place in the USA (Rosal, 1993), one in Norway (Beebe et al. 2010), one in Israel (Regev & Guttman, 2005) and three in Iran (Zaheri et al., 2013; Khadar et al., 2013a, 2013b). The sample sizes for the studies ranged between 20 – 109 participants, providing this systematic review with data from 247 participants in total. Studies were delivered over 7-25 weeks, while the sessions varied from 40'-60' and the number of sessions from 7-25.

Comparisons were made with waiting list control groups (Beebe et al., 2010; Zaheri et al., 2013), ‘traditional’/indirective group art therapy (Rosal, 1993), no intervention control groups (Rosal, 1993; Khadar et al., 2013a, 2013b; Regev & Guttman, 2005), games group (Regev & Guttman, 2005), and an arts group (Regev & Guttman, 2005).

Participants were children aged 6-14 years with a variety of conditions including asthma (Beebe et al., 2010), behavioural disorders (Rosal, 1993), oppositional defiant disorders (Khadar et al., 2013a), separation anxiety disorders (Khadar et al., 2013b), learning disorders (Regev & Guttman, 2005) and disruptive behaviours (Zaheri et al., 2013).

The primary outcomes: quality of life (Beebe et al., 2010); locus of control (Rosal, 1993); changes in disruptive behaviours (Zaheri et al., 2013); symptoms of oppositional defiant disorders (Khadar et al., 2013a); symptoms of separation anxiety disorders (Khadar et al., 2013b); self-esteem, intellectual achievement responsibility, empowerment, loneliness and social dissatisfaction (Regev & Guttman, 2005).

DISCUSSION

Types of art therapy interventions and evidence of effectiveness

Beebe et al. (2010) delivered seven sessions of group art therapy to children with asthma. The sessions focused on the realisation of one’s self-concepts and their transformation. Some of the activities included mask making in order to express feelings related to illness; or making angry volcanos from clay and transform them into calm mountains as a method to relieve and transform anger. Children were also given colours to express the pain after an asthma attack as a pain management technique. The activities helped children to develop self-care and positivism (i.e. making sun/dream catchers). The Pediatric Quality of Life questionnaire (Varni, Burwinkle, Rapoff, Kamps & Olson, 2004) suggested significant improvements both from parents’ and children’s perspective. Beck inventories (Beck, Beck & Jolly, 2005) showed improved anxiety and self-concept scores, while the Formal Elements Art Therapy Scale (Gannt & Tabone, 2003) showed improved problem-solving and affect drawing scores. These benefits persisted after 6 months, though the frequency of asthma exacerbations did not differ between the groups.

However, the statistical data indicated that there was a significant reduction in 4/10 QoL items (Varni, Burwinkle, 2004) at 7 weeks and in only 2/10 at 6 months. Similarly, in the Beck Youth Inventory (Beck, Beck & Jolly, 2005), there was a significant improvement in 2/5 items at 7 weeks and in only 1/5 items at 6 months.

Rosal (1993) delivered 20 sessions of unstructured group art therapy and 20 sessions of cognitive behavioural group art therapy to children with behavioural disorders. The cognitive behavioural art therapy focused on progressive muscle relaxation, imagery activities and the use of art media to express conflict situations. The sessions were based on three thematic circles: the “egocentric” theme (i.e. self at home or school, likes and dislikes), the “community” (i.e. dealing with authorities, boundaries, peers) and the “global” theme (i.e. dealing with problems, feelings or desires and the self in a past-future time perspective). The traditional group art therapy was unstructured allowing children to use the available art media in any way they preferred. The Children’s Nowicki-Strickland Internal-External Locus of Control (Nowicki & Strickland, 1973) did not show significant differences in any group, although both art therapy groups moved towards the norm. The Teacher Rating Scale (Conners, 1969) showed improvements in 9/12 students in the cognitive art therapy group and 8/12 in traditional group art therapy. The Personal Construct Drawing Interview (Rosal, 1993) suggested that students were better able to understand their feelings and behaviours, and developed positive attitudes towards school. All improvements sustained two weeks later. Rosal (1993) concluded that disruptive students may benefit from the high structure of the cognitive art therapy, whereas quiet and isolating students may need, or enjoy more, the unstructured atmosphere of the group art therapy; though there was no evidence to support this argument. Nevertheless, it is important to mention that all sessions – both in the cognitive behavioural and the unstructured group - were delivered by the same art therapist. It is unclear whether personal affiliations may have affected the results of the study.

Khadar et al. (2013a, 2013b) delivered twelve sessions of group art therapy to children with symptoms of oppositional defiant disorders and separation anxiety disorders. The sessions included making paintings, sculptures, poems, storytelling, as well as the use of dance and drama techniques. Children were invited to share memories and feelings, while the art therapist helped them to develop problem solving skills. The Child Symptom Inventory-4 (Sprafkin & Gadow, 1996) showed significant reductions in the symptoms of oppositional defiant disorders and

separation anxiety disorders. Whether the improvements sustained at the follow-up stage, one month after the end of the intervention, remains unclear. Although the contact with the authors was successful, the language barrier made it challenging to gather any further information.

Regev and Guttmann (2005) delivered 25 sessions of non-directive group art therapy to children with learning disorders. Children could choose freely the materials and use them in any way they like. Discussions would follow in the circle inviting children to reflect on their artistic creations, and how these relate to themselves, their feelings and experiences. None of the outcome measures – Piers–Harris Children's Self-Concept Scale (Buros, 1972), Intellectual Achievement Responsibility Questionnaire (Crandall & Katkovsky, 1965), Children's Sense of Coherence Scale (Margalit & Efrati, 1996), Loneliness and Social Dissatisfaction Questionnaire (Asher, Parkhurst, Hymel & Williams, 1990) – showed significant improvements in the art therapy group.

Zaheri et al. (2013) published their study at the 6th International Congress on Child and Adolescent Psychiatry. The efforts to approach the researchers for further information were unsuccessful, and therefore limited information can be provided. Ten sessions of cognitive-behavioural group art therapy were delivered to children with highly disruptive behaviours. The Achenbach Child Behavior Checklist (Achenbach & Rescorla, 2001) suggested significant reduction of disruptive behaviours, which sustained two months later.

From the two ongoing studies, Edbrooke-Childs (2016) is conducting a cluster randomised controlled trial in England, in order to examine the effectiveness of the ReZone app in improving children's self-management, wellbeing and quality of life, and in reducing emotional and behavioural difficulties. This app is made available for 12 weeks to students who feel overwhelmed at school and are struggling to engage in the class. It aims to help students manage their emotional wellbeing through reflecting on their feelings and thinking through problems logically. For example, when children feel anxiety or stress, the 'stress bucket' activity invites them to reflect on what causes these feelings, and provides them with digital art media to create things that might help in stress relief. The ReZone app contains activities based on art therapy, metallisation based therapy, and cognitive behaviour therapy techniques; it is therefore unclear whether the results of the art therapy activities will be analysed individually, or whether an art therapist will be involved during these activities. The effectiveness, however, will be

evaluated through the Me and My School questionnaire (Deighton et al., 2013), the Warwick-Edinburg Mental Well-being Scale (Taggart, Steward-Brown & Parkinson, 2015), the Youth Empowerment Scale-Mental Health (Walker & Powers, 2007), and the Health-Related Quality of Life (De Wit & Hajos, 2013). The outcomes will be assessed immediately after the end of the intervention and twelve weeks later. Further details are presented in Table 4.

Kharazmi (2016) is currently delivering a three-arm controlled before and after study in Iran, providing ten sessions of art therapy and ten sessions of play therapy to children with learning difficulties. Limited information is provided in the trial registry with regards to the intervention or which therapeutic approach will be followed. Though the main aim is to evaluate the effectiveness of art therapy in improving children's social skills. The assessment will be through the Social Skills Inventory (Riggio, 2005) at the beginning of the sessions, halfway through and immediately after the end of the intervention (Table 4).

Quality appraisal

Based on the Cochrane Collaboration's recommended tool for assessing risk of bias (Higgins & Green 2011), the tables 6 and 7 present the quality appraisal for each study individually and as a summary. For the majority of categories there was insufficient information to judge the risk of bias. The most important points of discussion are the following.

Selection bias: Four out of the six included studies in this review were non-randomised controlled before-and-after. These studies fall under the category of high risk of random sequence (Higgins & Green, 2011) as the methods of allocating participants into groups is highly likely to have affected the results. Similarly, the two randomised controlled studies provide insufficient information as to how participants were selected and allocated into groups, therefore the risk of selection bias was unclear. Furthermore, most studies employed volunteer participants, therefore the samples might be skewed in favour of children who were motivated to participate in art therapy, or parents/gatekeepers who encouraged this. The hard-to-reach population, children at risk or in higher need for art therapy may have remained unidentified.

Performance and detection bias: Blinding was not feasible in any of the studies, which is common challenge for psychotherapeutic interventions especially at school-based settings. It is

therefore unclear to assess the impact on the delivery of the intervention and the results. For example, in Rosal’s study (1993), all sessions in both cognitive behavioural and unstructured art therapy were delivered by the same art therapist. This was an effort to control for the ‘therapist variable’; the link between effectiveness and the art therapist’s skills. However, without blinding, the art therapist could be more effective either in the cognitive behavioural or the unstructured art therapy group depending on potential affiliations; or could be less effective if the art therapist was not used to incorporating cognitive behavioural approaches in their art therapy practice. There was insufficient information to evaluate this.

Attrition and reporting bias: Three out of six studies provided insufficient information to appraise if there were incomplete outcome data or how missing data were handled (Table 6). The attrition rates were not reported either, making unclear if some participants withdrew, dropped out, or did not attend some of the sessions. In addition, authors might overestimate the effectiveness of art therapy when they report the results. For example, Beebe et al. (2010) supported that art therapy was effective in improving quality of life and self-concept, and that these improvements persisted 6 months later. However, examining the statistical data in the intervention group, there was a significant reduction in 4/10 QoL items (Varni, Burwinkle, 2004) at 7 weeks and in only 2/10 at 6 months. In the Beck Youth Inventory (Beck, Beck & Jolly, 2005), there was a significant improvement in 2/5 items at 7 weeks and in only 1/5 items at 6 months. These results might not fully align with the authors’ conclusions.

Other sources of bias: The study protocol was not available in any of the studies. This might be explained by the fact that standardised reporting guidelines might not be available when the studies were conducted. Hence, some aspects of the studies remain unclear, such as the degree of fidelity to the protocol or whether any modifications were required. In addition, sufficient information about baseline characteristics of the participants was not reported in any study, making challenging to evaluate the actual extent of effectiveness in the targeted outcomes.

The risk of harm is another potential source of bias, which was not reported in any study. This comes in agreement with the findings of previous systematic reviews (McDonald & Drey, 2017; Uttley et al., 2015). For example, in Regev and Guttman (2005) it was unclear whether children in the art therapy group were aware that they were being compared to a games group and an arts group, and what were the criteria for allocation in the different groups. Any

misunderstandings might have the potential to cause stigma and harm (Curran et al., 2019). In addition, since all intervention delivered group art therapies, the more “quiet” children might not receive as attention as the “louder” children, or for some children the number of sessions might not be enough. In short-term durations of treatment some emotions might remain unresolved, whereas in longer treatments children might develop great fear of the upcoming separation and termination of the sessions (Curran et al., 2019). No information related to children’s safety and potential for adverse effects was made available.

Implications for research and practice

Based on these findings, research in art therapy is growing. Improvements in the methodological quality of future experimental studies would significantly help to be more confident in the effectiveness of school-based art therapies. Furthermore, considering that all studies investigated the effectiveness in different outcomes through various outcome measures, it appears that the identification of common primary outcomes, as well as reliable and validated outcome measures is of great importance.

It is essential for future studies to identify the parameters that might affect the effectiveness of art therapy and report them adequately. Any variations in the duration, frequency, intensity of the interventions, the art therapists’ background and previous experience, the participants’ pre-existing preference for art therapy, might lead to substantially different effects. There are some indications that increasing the number of the sessions might not necessarily link to further improvements in the targeted outcomes. For example, the intervention with the shortest duration – seven sessions in Beebe et al. (2010) – showed more effective results compared to the longest intervention – 25 sessions in Regev and Guttmann (2005). Following properly endorsed and implemented reporting guidelines would shed light to these differences, allowing for a better understanding of the findings and increased impact of research into practice. The Template for Intervention Description and Replication, known as the TIDieR checklist (Hoffmann et al., 2014), is a highly recommended guide to report future interventions.

In agreement with a systematic review on the effectiveness of art therapy for people with non-psychotic mental health disorders (Uttley et al., 2015), future instruments should ideally

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3 assess first-person outcomes (participants), second-person outcomes (e.g. from teachers or
4 parents) as well as third-person outcomes (e.g. through behavioural tasks or observations). This
5 would allow a more pluralistic understanding of the benefits of art therapy. In this systematic
6 review, only second-person outcomes were considered, particularly assessed by teachers and
7 parents. Children’s voice remained silent, except in Regev and Guttmann (2005), and Beebe et
8 al. (2010).

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14 Five out of six studies employed short-term follow-up methods. The findings suggested
15 that the benefits lasted two weeks later (Rosal, 1993), two months later (Zaheri et al., 2013) and
16 six months later (Beebe et al., 2005). Khadar et al. (2013a, 2013b) did not report the follow-up
17 results. It would be beneficial if the follow-up period is extended so that outcomes can be
18 assessed a year or more after the end of art therapy. Although, in reality, it may be challenging to
19 follow-up children who move to different grades or schools, exploring the long-lasting effects
20 would help to understand whether real changes occurred, or the reported effects were due to
21 participants’ temporary confidence that they would be able to change their life (Younge,
22 Kouwenhoven-Pasmooij, Freak-Poli, Roos-Hesselink, & Hunink, 2015). Furthermore, evidence
23 of sustained benefits could lead to increased public recognition from policy-makers and inclusion
24 of art therapy in national and international guidelines, such as the National Institute for Health
25 and Care Excellence (NICE).

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36 In this systematic review, information regarding the cost to design and deliver the
37 interventions was not available in any study. In the interest of increasing funding opportunities
38 for research in art therapy, it is crucial to focus on the cost-effectiveness of art therapy versus
39 other treatments, and shorter versus longer durations of treatment.

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45 **Limitations**

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48 This review was limited to English only publications, so it is possible that there are
49 relevant papers published in other languages. Due to time and resource restraints, some of the
50 grey literature may have been unidentified. The author may have also failed to identify studies
51 that were inaccurately indexed or categorised in the electronic databases. Furthermore, there is
52 currently no guidance regarding how to assess the risk of bias in older studies with no published
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protocol available (Viswanathan et al., 2012). The quality appraisal was based on the absence of sufficient information rather than on the existing information, therefore the quality and risk of bias for each study might have been estimated incorrectly.

CONCLUSIONS

This study was a systematic review on the effectiveness of art therapy in school-based settings to children aged 5-12 years. Six studies and two on-going clinical trials were identified. Art therapies were delivered to children with asthma, behavioural disorders, oppositional defiant disorders, separation anxiety disorders, learning disorders, and disruptive behaviours. All interventions were delivered over 7-25 sessions, 40'-60' per session. The sample sizes ranged between 20-109 participants, providing this systematic review with data from 247 participants.

There is evidence that art therapy is effective in improving children's quality of life; anxiety; self-concept; problem-solving skills, attitudes towards school; emotional and behavioural difficulties. Although the evidence is based on studies with high or unclear risk of bias, undertaking experimental studies in school settings is not an easy task given the lack of funding and the challenges of implementation. The fact that a beginning has been made towards rigorous experimental studies which contribute to the development of art therapy evidence-base is promising, and so are the results of this systematic review.

There were significant variations in terms of the duration, length, and frequency of art therapy. The shortest intervention (seven sessions) suggested significant improvements in all outcomes, whereas the longest intervention (25 sessions) did not show significant improvements; indeed, an arts group and a games group appeared to be more effective than art therapy. These findings raise the issue of whether longer durations of treatment are indeed more beneficial than shorter. One possibility is that during extended number of sessions, children become more aware of their emotions, which often comes with greater amount of distress, or fear of separation when arts therapies come to an end (Curran et al., 2019). Providing information such as, the art therapist background and experience, or the participants' preference for art therapy could shed light to this question. Exploring common primary outcomes would also be essential in order to

make more accurate comparisons between different interventions and lead to improvements in evidence-based practice.

Although there are only few experimental studies in primary school based art therapy, the amount of qualitative research is significantly arising. Indeed, it is possible that art therapists might fear experimental research as a “reductionist” approach to a rather complex and subjective therapeutic process. However, given the vast research progress in other psychotherapeutic interventions and treatments, this might be the only way for art therapy to gain public recognition and increased funding opportunities. Using the strengths of qualitative and arts-based research methods, and embedding them into rigorous experimental designs, may revitalise the interest in school-based art therapy research, and allow this field to continue flourishing.

Funding details: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Disclosure statement: No potential conflict of interest was reported by the authors.

Biographical note: Zoe Moula is a PhD candidate at Edge Hill University, UK. She has earned her MRes in Health Research, MSc in Therapeutic Play, PGCE in Teaching in Higher Education, and BSc in Early Years Education. Her previous work has included teaching and researching at schools in China, Greece, Cyprus, Hungary, and the UK, focusing on the impact of play for children’s emotional well-being. Currently, she is conducting a pilot randomised controlled study at primary schools across the North West region of England to explore the benefits of arts therapies (music, art, drama, dance movement therapy) for children’s quality of life, quality of sleep, wellbeing and emotional expression.

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Figure 1: PRISMA flow diagram

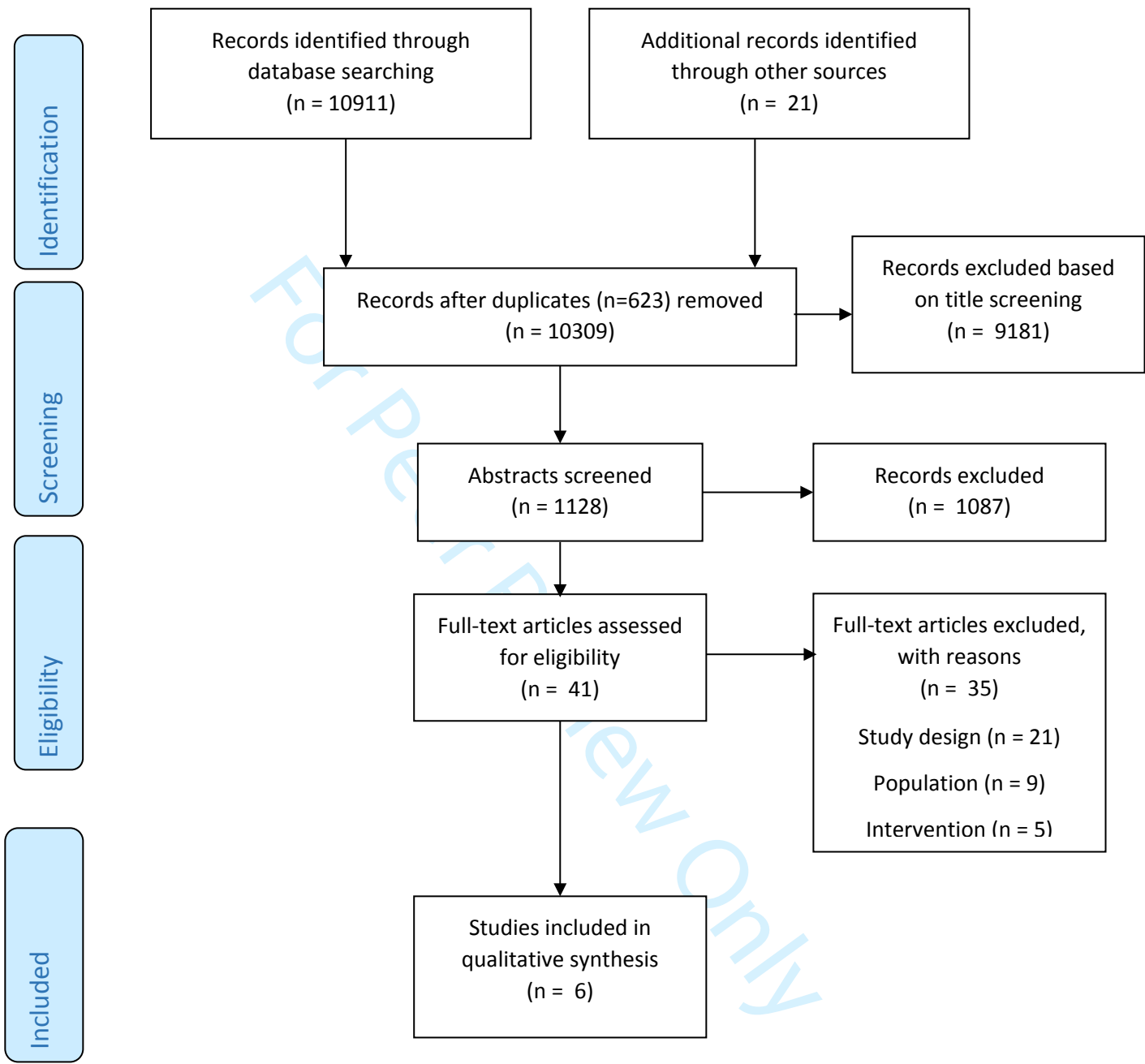


Table 1: Example search strategy [Ovid Medline® ALL]

1	Art Therapy/
2	SENSORY ART THERAPIES/
3	art.ti,ab.
4	draw.ti,ab.
5	(artist or artistic).ti,ab.
6	artwork.ti,ab.
7	(drawing* or sketching or sketches or paint*).ti,ab.
8	(etch* or doodle* or “still life” or tracing).ti,ab.
9	“water colours”.ab,ti.
10	“acrylic colours”.ab,ti.
11	(pastel* or clay or collage*).ti,ab.
12	“visual digital media”.ab,ti.
13	or/1-12
14	(school* or school-based or students).ab,ti.
15	13 and 14
16	limit 15 to (English language and humans and yr=”1980-Current”)

Table 2: Selection criteria employed in the systematic review

<i>Inclusion criteria</i>	
Population	Children aged 5-12 in school-based settings. The age range was defined specifically given that primary school ages differ internationally. Studies in which the majority (<75%) of the participants were older than 12 years and younger than 5 years old were included.
Intervention	All studies of art therapy ¹ delivered in a school-based setting were considered. This may include (but is not limited to) drawing, painting, sculpture, digital media and other forms of art.
Comparison	No treatment, another treatment (i.e. counselling, music therapy) or one art therapy intervention versus another art therapy intervention.
Outcomes	<p>The primary outcome was Quality of life, as measured by the physical health (e.g. energy and fatigue), psychological health (e.g. positive/negative feelings, self-esteem), personal development and fulfilment, social relationships and support, and other environmental factors (e.g. home environment). Suitable instruments to measure this outcome were the QOLS, WHOQOL, or the HRQOL (Burckhardt and Anderson 2003).</p> <p>Secondary outcomes were the distress level, as measured by CORE and CORS, anxiety and depression, as measured by HADS, HAM-A, CAPS, SPIN, LSAS or PDSS (Coetzer 2010).</p> <p>Other outcomes not pre-specified but considered to be important during the review were also included.</p> <p>Outcomes at the end of the intervention (immediate), up to one-year post-intervention (≤ 12 months), and more than one-year post-intervention (>12 months) were also included.</p>
Study design	Randomised controlled trials (RCTs) including cluster RCTs, quasi-RCTs and controlled before and after studies (CBAs). For the purpose of this review, CBA studies were defined as trials in which an outcome measurement(s) has been measured at baseline, and post-intervention for <i>both</i> groups.

¹ According to the Health and Care Professions Council (2013), both terms “therapy” and “psychotherapy” are legally protected as long as the intervention meets the following criteria: a) establishes clear therapeutic boundaries through a therapeutic agenda, for example, start and finish of treatment, frequency and length of sessions; b) is being delivered by an accredited art therapist; c) includes the therapeutic use of art materials with a clear psychological intent that targets change directly and d) is appropriate to the cultural and service context. For the purpose of this study, the term ‘therapy’ was considered more suitable for school-based settings and a non-clinical population

Table 3. Summary of key characteristics of included studies**Abbreviations:** RCT – randomised controlled trial; CBA – controlled before and after study; NR – not reported

Study 1. First author 2. Year 3. Study design 4. Country	Aim	Participants and setting 1. Study population 2. Total number 3. Age 4. Gender 5. Setting	Intervention/Control* 1. Name of intervention 2. Name of comparison group 3. Art therapy regimen	1. Outcome measures 2. Data collection	Key results
1. Beebe 2. 2010 3. RCT 4. Norway	To test an art therapy intervention in children with asthma	1. Children with asthma 2. 22 3. 7-14 years old 4. Both genders 5. School clinic	1. Art therapy 2. Wait-list control 3. 60' session, weekly for 7 weeks (Total: 7 sessions)	1. Formal Elements Art Therapy Scale (FEATS)/ Person Picking an Apple from a Tree (PPAT); Beck Youth Inventory (BYI); Paediatric Quality of Life (PedsQL) 2. Immediately post-intervention and 6 months later	<u>PedsQL</u> : Significant improvements in both parent- and child-reported QoL scores <u>BYI</u> : Improved child-reported anxiety and self-concept scores <u>ATS/PPAT</u> : improved problem-solving and affect drawing No changes in the control group No change in the frequency of asthma exacerbations in both groups <u>Follow-up</u> : All improvements maintained at 6 months
1. Khadar 2. 2013a 3. CBA 4. Iran	To investigate the effect of art therapy based on painting therapy on boys with symptoms of oppositional defiant disorder	1. Children with symptoms of oppositional defiant disorder 2. 30 3. 7-12 4. Boys only 5. Primary school	1. Art therapy / Painting therapy 2. No intervention 3. 40' session, twice weekly for 6 weeks (Total: 12 sessions)	1. Child-Symptom Inventory-4 (CSI-4) 2. Immediately post-intervention and 1 month later	<u>CSI-4</u> : Art therapy group showed significant reductions in the symptoms of oppositional defiant disorder No changes in the control group <u>Follow-up</u> : NR
1. Khadar 2. 2013b 3. CBA 4. Iran	To investigate the effect of art therapy based on painting therapy on boys with symptoms of separation anxiety disorder	1. Children with symptoms of separation anxiety disorder 2. 30 3. 7-12 4. Boys only 5. Primary school	1. Art therapy / Painting therapy 2. No intervention 3. 40' session, twice weekly for 6 weeks (Total: 12 sessions)	1. Child-Symptom Inventory-4 (CSI-4) 2. Immediately post-intervention and 1 month later	<u>CSI-4</u> : Art therapy group showed significant reductions in the symptoms of separation anxiety disorder No changes in the control group <u>Follow-up</u> : NR

Study 1. First author 2. Year 3. Study design 4. Country	Aim	Participants and setting 1. Study population 2. Total number 3. Age 4. Gender 5. Setting	Intervention/Control* 1. Name of intervention 2. Name of comparison group 3. Art therapy regimen	1. Outcome measures 2. Data collection	Key results
1. Regev 2. 2005 3. RCT 4. Israel	To examine the psychological benefits of artwork for children with learning disorders	1. Children with learning disorders 2. 109 3. 8-13 years old 4. Both genders 5. Primary school	1. Non-directive art therapy 2(i). Arts group 2(ii). Games group 2(iii). No intervention 3. 45' session, weekly for 25 weeks (Total: 25 sessions)	1. Piers–Harris Children's Self-Concept Scale (CSCS); Intellectual Achievement Responsibility Questionnaire (IRAQ); Children's Sense of Coherence Scale (CS); Loneliness and Social Dissatisfaction Questionnaire (LSDQ) 2. Immediately post-intervention	<u>CSCS</u> : Only the games group showed significant improvements <u>IRAQ</u> : No significant improvements were reported <u>CS</u> : Only the arts group showed significant improvements <u>LSDQ</u> : No significant improvements were reported <u>Follow-up</u> : NR
1. Rosal 2. 1993 3. CBA 4. USA	To modify the locus of control and adaptive classroom behaviour of children with behaviour disorders	1. Children with behavioural disorders 2. 36 3. 9-12 years old 4. Both genders 5. Primary school	1. Cognitive-behavioural art therapy 2(i). Traditional group art therapy 2(ii). No intervention 3. 50' session, twice a week for 10 weeks (Total: 20 sessions)	1. Children's Nowicki-Strickland Internal-External Locus of Control (CNS-IE); Teacher Rating Scale (TRS); Personal Construct Drawing Interview (PCDI) 2. Immediately post-intervention and 2 weeks later	<u>CNS-IE</u> : No significant differences, but the art therapy groups showed improvements <u>TRS</u> : The art therapy groups were significantly more effective than the control group in improving children's behaviour. The two art therapy groups did not differ significantly from each other (75% improvement in cognitive-behavioural art therapy and 67% in traditional group art therapy) <u>PCDI</u> : Increased positive attitudes towards school in both art therapy groups, but not in the control group <u>Follow-up</u> : All improvements sustained at 2 weeks
1. Zaheri 2. 2013 3. CBA 4. Iran	To decrease children's disruptive behaviours	1. Children with highly disruptive behaviours 2. 20 3. 9-10 years old 4. Boys only 5. Primary school	1. Cognitive-behavioural group art therapy 2. Wait-list control 3. 60' session, weekly for 10 weeks (Total: 10 sessions)	1. Achenbach Child Behaviour Checklist (ACBC) 2. Immediately post-intervention and 2 months later	<u>ACBC</u> : Significant decrease in disruptive behaviours Changes in the control group were not reported <u>Follow-up</u> : Improvements sustained at 2 months

Table 4: Characteristics of ongoing studies

Study 1. First author 2. Year 3. Study design 4. Country	Aim	Participants and setting 1. Study population 2. Total number 3. Age 4. Gender 5. Setting	Intervention/Control* 1. Name of intervention 2. Name of comparison group	1. Outcome measures 2. Data collection
1. Edbrooke-Childs 2. 2016 3. Cluster RCT 4. England	To examine the effectiveness of an mHealth intervention (ReZone) in: a) reducing emotional and behavioural difficulties b) improving self-management, well-being, and health-related quality of life for young people in need of targeted support to engage with school	1. Young people 2. 60 3. 11-14 years old 4. Both genders 5. Alternative provision schools	1. ReZone app (Access for 12 weeks when students feel overwhelmed). The ReZone app contains four tools based on art therapy, metallisation based therapy, and cognitive behaviour therapy techniques (i.e. the 'stress bucket' exercise, 'time out' incident clock, art zone, mindfulness breathing). 2. No intervention	1. Me and My School (M&MS); Warwick-Edinburg Mental Well-being Scale (SWEMWBS); Youth Empowerment Scale-Mental Health (YES-MH); Health-Related Quality of Life (EQ-5D-Y) 2. Immediately post-intervention and 12 weeks later
1. Kharazmi 2. 2016 3. CBA 4. Iran	To improve social skills of students with learning disabilities	1. Children with learning disabilities 2. 60 3. 6-12 years old 4. Both genders 5. Primary school	1. Art therapy (10 sessions, once weekly) 2(i). Play therapy (10 sessions, once weekly) 2(ii). No intervention	1. Social Skills Inventory 2. Baseline, 5 th session, and 10 th session (Follow up: N/A)

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Table 5: Studies awaiting classification

First Author (year)	Objective	Notes
(Belew 2013)	A program evaluation of art therapy at the Chicago Children's Advocacy Center with sexually abused children.	Full-text not found
(Bornmann et al. 2007)	To explore the relationship between the psychotherapeutic relaxation group (a combination of creative arts therapy and progressive muscle relaxation) and the levels of aggression in the school setting of inpatient child psychiatry.	Full-text not found
(Boswell 1983)	An experimental study of adapted dance with creative arts therapies for children with learning disorders.	Full-text not found
(Broome et al. 2001)	An intervention to increase coping with pain and reduce health care utilization for school-age children and adolescents with sickle cell disease.	Full-text not found
(De Chiara 1982)	To investigate whether a visual arts program related to the human figure would enhance the body image of children with learning disabilities.	Full-text not found
(Keve 1995)	To evaluate and document the use of art therapy for primary prevention and intervention on-site in public schools. The project evaluated the effectiveness of an art therapy for children with a wide range of family or developmental challenges. The program focus was relief of the children's anxiety and repression stemming from family or situational stress, strengthening self-concept self-esteem, self-initiated activity and school performance.	Full-text not found
(Prokoviev 1998)	To adapt and evaluate art therapy for children in a large mainstream primary school.	Full-text not found
(Rutherford 2015)	Abstract unavailable	Full-text not found
(Wassermann 2003)	To explore the potential benefits of a creative arts therapy program on the academic achievement of children from a disadvantaged neighborhood and the Iowa test scores of Basic Skills for high risk youth.	Full-text not found
(Wurzel 2012)	An evaluation of a school-based creative arts primary prevention program for children in elementary schools. This study aims to answer whether the program is effective in improving affect, problem solving skills, the ability to seek social support, and self-esteem. It also examined whether it is effective in decreasing negative coping skills of distancing, internalizing, and externalizing.	Full-text not found
(Zarezadehkheibari et al. 2014)	To examine the effectiveness of expressive art group therapy on interional self-efficacy of foster children.	Full-text not found

Table 6: Risk of bias for each included study

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Beebe et al. 2010	?	?	?	?	+	?	?
Khadar et al. 2013a	-	-	?	?	?	-	-
Khadar et al. 2013b	-	-	?	?	?	-	-
Regev et al. 2005	?	?	?	?	+	+	?
Rosal 1993	-	-	?	?	+	+	?
Zaheri et al. 2013	-	-	?	?	?	?	?

Table 7: Risk of bias summary graph

